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# SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • APRIL 14, 1945

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DETROIT

Early Blossoms  
See Page 232

A SCIENCE SERVICE PUBLICATION

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In a wind tunnel an **AERONAUTICAL ENGINEER** uses a 40,000 horsepower electric motor to create a 400-mile-an-hour tornado for testing war planes.

*... the name on the MOTOR is Westinghouse.*

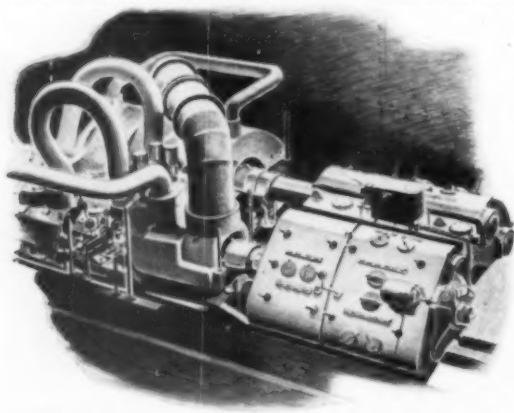


In a factory a **WORKER** assembles delicate bomb-sight parts in air made dust-free by the Precipitron\* electrostatic air cleaner.

*... the name on the PRECIPITRON\* is Westinghouse.*

In a penicillin plant a **SCIENTIST** uses a Sterilamp\* bactericidal tube to protect this life-saving drug from contamination by air-borne bacteria.

*... the name on the STERILAMP\* is Westinghouse.*



On America's largest aircraft carriers the **NAVY** uses steam turbines which make our carriers the world's fastest.

*... the name on the TURBINES is Westinghouse.*

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**TODAY** — These are some of the ways in which Westinghouse products are serving in the war effort.

**TOMORROW** — Existing and new products of Westinghouse research and engineering will serve industry and the home.

\*TRADEMARK REG. U.S. PAT. OFF.

Tune in: JOHN CHARLES THOMAS—Sunday 2:30 pm, EWT, NBC. TED MALONE—Mon. Tues. Wed. Evening, Blue Network

## PSYCHOLOGY

# Basis for Lasting Peace

More than 2,000 psychologists agree on ten points which must be considered in framing the peace. The document has been submitted to members of Congress.

► TEN POINTS of human nature which must be considered in the framing of a lasting peace, as agreed to by more than 2,000 American psychologists, have been sent to all U. S. Senators and members of the House of Representatives to aid them in making plans for an enduring peace, it has been announced.

The statement on "Human Nature and the Peace" was framed by an informal committee of 13 psychologists headed jointly by Dr. Gordon W. Allport, chairman of the department of psychology at Harvard University, and Dr. Gardner Murphy, chairman of the department of psychology of the College of the City of New York, both past presidents of the American Psychological Association, national professional organization of scientists in this field.

The statement was sent for approval to the total membership of the Association, including about 850 members and 2,950 associate members. Of these 3,800, a total of 2,038 endorsed the statement and only 13 dissented.

War is not born in men; it is built into men. This is the first of the ten principles. The frustrations and conflicting interests which lie at the root of aggressive wars can be reduced and redirected, the psychologists state in explaining the first principle.

Racial, national and group hatreds can also, to a considerable degree, be controlled. "Prejudice," the statement declares, "is a matter of attitudes, and attitudes are to a considerable extent a matter of training and information."

Liberated and enemy peoples must participate in planning their own destiny. Complete outside authority imposed on liberated and enemy peoples without any participation by them will only lead to further disruptions of the peace, the psychologists state. The people of all countries must not only have hope for themselves and their children, but must also feel that they have responsibility for achieving their political and economic future.

Clear-cut and easily understood definition of war-guilt is essential. This is another point made by the psychologists who believe confusion among defeated

peoples must be avoided.

Safest guide to framing a peace is to be found in the deep desires of the common people of all lands—another point made in the statement. "Disrespect for the common man is characteristic of fascism and of all forms of tyranny," reads the document. "The man in the street does not claim to understand the complexities of economics and politics, but he is clear as to the general directions in which he wishes to progress. His will can be studied by adaptations of the public opinion poll. His expressed aspirations should even now be a major guide to policy."

Costs of circulating the document for comments and signatures by psychologists were borne by the Society for the Psychological Study of Social Issues.

Members of the informal committee, in addition to the two chairmen, are:

R. S. Crutchfield, now in government service on leave from Swarthmore College, Swarthmore, Pa.; H. B. English, professor of psychology, Ohio State University, Columbus, Ohio; Edna Heidbreder, chairman of the department of psychol-

ogy, Wellesley College, Wellesley, Mass.; E. R. Hilgard, chairman of the department of psychology, Stanford University, Palo Alto, Calif.; Otto Klineberg, in government service on leave from Columbia University, New York; R. Likert, head of the division of program surveys, Bureau of Agricultural Economics, Washington, D. C.; Mark A. May, director, Institute of Human Relations, Yale University; O. H. Mowrer, in government service on leave from department of education, Harvard; C. C. Pratt, chairman of the department of psychology, Rutgers University, New Brunswick, N. J.; W. S. Taylor, professor of psychology, Smith College, Northampton, Mass., and E. C. Tolman, chairman of the department of psychology, University of California, Berkeley, Calif.

*Science News Letter, April 14, 1945*

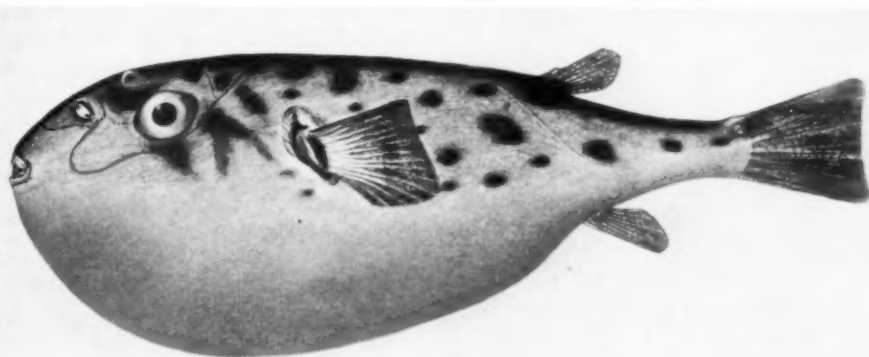
## PSYCHOLOGY

## Complete Text of Peace Document

### Human Nature and the Peace

#### A Statement by Psychologists

► HUMANITY'S demand for lasting peace leads us as students of human nature to assert ten pertinent and basic principles which should be considered in planning the peace. Neglect of them may breed new wars, no matter how well-intentioned our political leaders may be.



**RARE SPECIMEN**—Strange-looking, this fish is one of the two rare specimens found near Cape Henry, Va., by Hugh H. Iltis. Dark green above, the color of the skin, without spines or prickles anywhere, fades to light green on the flanks and white on the belly. The large spots scattered over the back and sides of this seven-inch fish are black. Sketched by Mrs. A. M. Aul of the U. S. National Museum, the *Sphaeroides pachygaster* had not been seen since it was first caught in the West Indies. Although younger than the adult caught off Barbados, Earl D. Reid of the National Museum reports to the American Society of Ichthyologists and Herpetologists that the smooth skin and position of the dorsal fin mark it as belonging to this species.



1. *War can be avoided: War is not born in men; it is built into men.* No race, nation, or social group is inevitably warlike. The frustrations and conflicting interests which lie at the root of aggressive wars can be reduced and re-directed by social engineering. Men can realize their ambitions within the framework of human cooperation and can direct their aggressions against those natural obstacles that thwart them in the attainment of their goals.

2. *In planning for permanent peace, the coming generation should be the primary focus of attention.* Children are plastic; they will readily accept symbols of unity and an international way of thinking in which the evils of imperialism, prejudice, insecurity, and ignorance are minimized. In appealing to older people, chief stress should be laid upon economic, political, and educational plans that are appropriate to a new generation, for older people, as a rule, desire above all else, better conditions and opportunities for their children.

3. *Racial, national, and group hatreds can, to a considerable degree, be controlled.* Through education and experience people can learn that their prejudiced ideas about the English, the Russians, the Japanese, Catholics, Jews, Negroes, are misleading or altogether false. They can learn that members of one racial, national, or cultural group are basically similar to those of other groups, and have similar problems, hopes, aspirations, and needs. Prejudice is a matter of attitudes, and attitudes are to a considerable extent a matter of training and information.

4. *Condescension toward "inferior" groups destroys our chances for a lasting peace.* The white man must be freed of his concept of the "white man's burden." The English-speaking peoples are only a tenth of the world's population; those of white skin only a third. The great dark-skinned populations of Asia and Africa, which are already moving toward a greater independence in their own affairs, hold the ultimate key to a stable peace. The time has come for a more equal participation of all branches of the human family in a plan for collective security.

5. *Liberated and enemy peoples must participate in planning their own destiny.* Complete outside authority imposed on liberated and enemy peoples without any participation by them will not be accepted and will lead only to further disruptions of the peace. The common people of all countries must not only feel their political and economic future holds genuine hope for themselves and for

their children, but must also feel that they themselves have the responsibility for its achievement.

6. *The confusion of defeated people will call for clarity and consistency in the application of rewards and punishments.* Reconstruction will not be possible so long as the German and Japanese people are confused as to their status. A clear-cut and easily understood definition of war-guilt is essential. Consistent severity toward those who are judged guilty, and consistent official friendliness toward democratic elements, is a necessary policy.

7. *If properly administered, relief and rehabilitation can lead to self-reliance and cooperation; if improperly, to resentment and hatred.* Unless liberated people (and enemy people) are given an opportunity to work in a self-respecting manner for the food and relief they receive, they are likely to harbor bitterness and resentment, since our bounty will be regarded by them as unearned charity, dollar imperialism, or bribery. No people can long tolerate such injuries to self-respect.

8. *The root-desires of the common people of all lands are the safest guide to framing a peace.* Disrespect for the common man is characteristic of fascism and of all forms of tyranny. The man in the street does not claim to understand the complexities of economics and politics, but he is clear as to the general directions in which he wishes to progress. His will can be studied (by adaptations of the public opinion poll). His expressed aspirations should even now be a major guide to policy.

9. *The trend of human relationships is toward even wider units of collective security.* From the caveman to the twentieth century, human beings have formed larger and larger working and living groups. Families merged into clans, clans into states, and states into nations. The United States are not 48 threats to each other's safety; they work together. At the present moment the majority of our people regard the time as ripe for regional and world organization, and believe that the initiative should be taken by the United States of America.

10. *Commitments now may prevent postwar apathy and reaction.* Unless binding commitments are made and initial steps taken now, people may have a tendency after the war to turn away from international problems and to become preoccupied once again with narrower interests. This regression to a new post-war provincialism would breed the conditions for a new world war. Now is the time to prevent this backward step, and to assert through binding action

that increased unity among the people of the world is the goal we intend to attain.

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*Clear water* has been found to be the best lubricant for a diamond-drill bit used in mining, for cooling the bit, removing the cuttings, and obtaining the most footage in drilling.

The *grasshopper mouse* (so named because it preys on grasshoppers) may be heard, out on the short-grass plains or sagebrush-covered hills of the West, singing a tiny, highpitched, musical song in the evenings.

## SCIENCE NEWS LETTER

Vol. 47

APRIL 14, 1945

No. 13

The weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N. St., N. W., Washington 6, D. C. North 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents. Monthly Overseas Edition: By first class mail to members of the U. S. armed forces, \$1.25 a year. To others outside continental U. S. and Canada by first class mail where letter postage is 3 cents, \$1.25 where letter postage is 5 cents \$1.50; by airmail, \$1.00 plus 12 times the half-ounce airmail rates from U. S. to destination.

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Entered as second class matter at the post-office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566 and 360 N. Michigan Ave., Chicago, STate 4439.

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## AERONAUTICS

# Cargo Flown to Mexico

Three tons of material, including penicillin, books, recordings and motion pictures reached Mexico City little more than 24 hours after leaving New York.

► THREE tons of cargo, including penicillin, books, recordings and motion pictures reached Mexico City on April 3, little more than 24 hours after leaving New York City on the first international commercial Airfreight shipment in history. Endorsed by the Office of Inter-American Affairs, the goodwill fast freight set a precedent in United States-Mexican relations.

Operated by American Airlines, with a DC-3 Airfreighter which was adapted from a regular passenger airliner, this flight was the first of a regular schedule of cargo flights to be expanded as more planes are made available by the Army.

Although American Airlines, and American Airlines de Mexico, inaugurated the first regular schedule of the international air freight two weeks ago, when about two tons of cargo from New York arrived in Mexico City, covering 2,458 miles in little more than 24 hours, the story of international air freight is more than the pioneering of one air line. It is more than the efforts of an American industry working with the Office of Inter-American Affairs. It is the story of people of our United States offering to the people of Mexico the tools and materials it needs to help keep healthy and progressive, for air freight will carry the products of American research and industry, produced by folks like those you know, for the benefit of their friends in another country. John and Jane Doe manufacture penicillin here so that Carlos and Conchita can secure it to help them get well when their Mexican doctor prescribes it.

In addition to a shipment of penicillin from E. R. Squibb & Company, the plane carried critical supplies and equipment from Wyeth Incorporated to be used to increase the production of the life-saving medicine at the Wyeth-Stille laboratories in Mexico. This is the only laboratory south of the Rio Grande successfully producing penicillin. Air transportation will enable research workers in Mexico to keep abreast of new developments.

The Office of the Co-ordinator of Inter-American Affairs shipped 100 copies of *En Guardia*, an overseas publication

sponsored by that office, as well as a number of recordings and motion pictures for use in Mexico.

Science Service placed on this first Airfreighter flight 100 copies of the *Overseas Edition of Science News Letter*, a monthly magazine designed to help scientists in all parts of the world keep abreast of latest developments in science. Also included in the freight were copies of medical books to be translated into Spanish for the use of medical students in Mexico and other Latin American republics.

Watson Davis, director of Science Service, was in Mexico City to receive the shipment, and to present copies of the publications flown by airfreighter to officials of the Mexican government as a good-will gesture.

The radio beam on which the American Airlines plane flies from LaGuardia Field to Mexico City is actually a series of continuous radio signals sent out from stations located at intervals of from 80 to 100 miles along the route. The recently established Monterey-Mexico City link of this system will permit pilots to fly the beam on the entire flight.

*Science News Letter, April 14, 1945*

## RADIO

## Chile Soon To Be Served By Powerful Radio Station

► CHILE, the longest narrow country in the world, will soon be served by one of the most powerful radio stations in the western hemisphere. The new station is one of the most modern broadcasting facilities in the world. Identified by the call letters CB114 it is the first longwave radio station to reach from Africa, on Chile's northern border, down through the 2600-mile length and 150-mile width to Punta Arenas, southernmost city in the world. Up to now, the country has been dependent on short-wave broadcasting for national coverage, reports the Radio Corporation of America's International Division.

Located near the capital city of Santiago, between the Andes mountains and the South Pacific, the station was specially designed and located to overcome long-wave radio transmission problems pre-



**ZIPPED IN**—This shows how the cargo is held in place in the Airfreighter. The packages are zipped, buckled or strapped into the separate bins to keep them from shaking while in the air

sented by Chile's rugged topography and long, narrow shape. A special type directional antenna and an elaborate ground system concentrate broadcast energy generally northward and southward. Although the rated power of the radio station is 50 kilowatts, the antenna and ground system provide an unmodulated carrier power of 135 to 140 kilowatts to the north and south. The antenna was specially built to fit the curve of the country. Two 300-foot high transmitting masts are surrounded by an underground network of 22 miles of four-millimeter copper wire to guarantee high antenna efficiency.

CB114 will operate on a frequency of 1140 kilocycles. It is the custom in Chile to designate a radio station by its call letters plus the first three digits of its frequency. The station was designed and built by Corporación de Radio de Chile. It is owned and will be operated by the Corporación Chilena de Broadcasting, headed by Adriano Iz Reyes. Broadcasting studios are located in Santiago.

In addition to providing national coverage for the people of Chile (her population is less than that of the state of Michigan), the new station will reach other countries in Latin America, including the southern regions of Argentina, as well as Peru to the north.

*Science News Letter, April 14, 1945*



## PSYCHOLOGY

# Shock Affects Memory

Experiments on rats indicate that electric shock treatment, widely used for mental illness, may have a damaging effect on memory and ability to re-learn.

► **ELECTRIC** shock treatment, widely used for the mentally ill, may have a damaging effect on memory and also on ability to re-learn, if findings in experiments on rats hold good for humans. The animal experiments were reported to the Eastern Psychological Association in independent papers by Dr. Carl P. Duncan, of Brown University, and Elliott M. McGinnies, Jr., of Harvard University.

In Dr. Duncan's experiment one group of rats were given electric shocks through the head lasting 22 hundredths of a second daily for 30 days. They were compared with two other groups of rats, one group receiving similar shocks through the hind legs and the others just being left in their cages.

All the rats had learned to run through a maze without making any wrong turnings. At the end of the 30-day period they were made to learn the maze again. The animals that had had the shocks through the head were inferior to both other groups although those who had had shocks through the legs were not significantly slower in re-learning than the group that was not shocked.

Most of the loss, Dr. Duncan reported, seems to be in retention, and seems to be due to a direct effect on cerebral tissue.

Dr. McGinnies' experiment on two albino rats that had learned to press levers one after the other to obtain a reward, suffered a temporary and sudden breakdown of the habit after electric shock convulsions. But he believes this might be due to loss of drive, although actual impairment of memory is a possibility.

## Psychoneurotics Picked

► **A SIMPLE** questionnaire of 92 questions, designed for the armed services, which can be answered by merely circling the answers "yes" or "no" and which can be given by an enlisted man and scored within one minute, picks out the men with serious personality or nervous difficulties from those who are in good mental health, with a high accuracy.

The test, which can be given to any number of men at the same time, was reported to the meeting by the following

research team: Dr. Arthur Weider, Dr. Kieve Brodman, Dr. Bela Mittelman and Dr. Harold G. Wolff, of Cornell University Medical College and Dr. David Wechsler, of Bellevue Hospital.

The questionnaire was tested on 980 enlisted men in Army camps and Army and Navy hospitals. Of those who gave more than 23 "wrong" answers on the questionnaire, all but .9% were found in a psychiatric interview to have personality disturbances and 92% were "severe psychoneurotics."

## Altitude Affects Speech

► **STRATOSPHERE** flyers may have difficulty in speaking so that others in the crew can understand them over their inter-phones, experiments conducted at the College of the City of New York and reported by Drs. G. M. Smith and Lt. (jg) C. P. Seitz, indicate.

The understandability of vowels, consonants and syllables all dropped as altitude increased, it was found in tests conducted in a chamber simulating altitude conditions. Somewhere between 13,600 feet and 16,900 feet flyers reach a height at which their speech falls off in intelligibility.

If the original sound level is low, the loss of accuracy in understanding the speech is great and the words rapidly become unintelligible.

## Apes Slower To Sit Alone

► **THE HUMAN** baby can learn to sit up alone at an earlier age than an infant chimpanzee can, two psychologists of the Yerkes Laboratories of Primate Biology, reported.

Capt. Austin H. Riesen and Dr. Elaine F. Kinder used tests developed for studying the growth of human babies to study the development of the little ape infants.

In general, they found, the chimpanzee baby gains control over his posture earlier than does the human. At birth, the chimpanzee can already control his head in ways not possible to human babies until they are four weeks or more old.

But ape and human are more evenly matched in sitting, and in sitting alone the human actually matures first. That, Dr. Kinder explains, is because of the difference in structure—the ape is top heavy with broad shoulders and narrow hips.

*Science News Letter, April 14, 1945*

## MEDICINE

## 8,000 Pints of Blood A Week from Fort Worth

► **A STREAM** of blood totalling 8,000 pints a week flows from the heart of Texas to battlefields in Europe and the South Pacific for use in treating shock from wounds and burns. Blood serum albumin has been produced in Fort Worth for the U. S. Navy since late 1943 at the Armour Laboratories plant, the only one especially built for fractionating blood plasma.

The process for the fractionation of blood plasma, which is adaptable to large-scale operation and which permits the separation of the many therapeutically valuable constituents of plasma, is the development of Prof. E. J. Cohn and associates at Harvard University Medical School, under a contract with the Office of Scientific Research and Development.

Normal human serum albumin is admirably adapted to the treatment of shock resulting from wounds and burns. It can be prepared as a stable sterile solution in water, ready for instant use. This solution is produced in highly concentrated form so that the resulting package is very small, in comparison with that required for dried plasma.

*Science News Letter, April 14, 1945*

## ENGINEERING

## National Uniformity of Working Plans Expected

► **NATIONAL** uniformity in the preparation of working drawings in military organizations and in war industries, as far as lettering and methods of indicating and specifying materials, finishes and other essentials are concerned, will result from the use of American war standards for drawing and drafting-room practice now under preparation by the American Standards Association at the request of the War Production Board. The Board desires particularly to bring about a correlation in the practices of the Army and Navy with those of industry.

It is a large undertaking, as millions of blueprints, plans and drawings are

made each year. They are used in the design and manufacture of even the simplest mechanical device.

Marked economies will result from the work, it is felt by Army and Navy authorities. The present existing diversity of drafting practices between the various branches of the Armed forces and industry, together with the attendant waste,

confusion and delays in providing the drawings for war equipment, has long been recognized by the services, and both Army and Navy have appointed committees to cooperate in bringing together the practices in the various branches of the services, and, through the American Standards Association, correlating these practices.

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#### ENTOMOLOGY

## Records Mosquitoes' Song

The love-songs of these pests have been "waxed" on phonograph records. The object is to use the recordings in luring the insects to their doom in traps.

► LOVE-SONGS of mate-seeking mosquitoes have been "waxed" on phonograph records in the public health laboratories of Cornell University Medical School, by Dr. Morton C. Kahn, Dr. William Celestin and Dr. William Offenhauser. Their intention is to use these mating calls to lure the death-carrying pests to their own death in insect traps.

The insects' sounds, often only faintly audible to the human ear or even quite inaudible, were greatly amplified before

being recorded. Some species, such as *Aedes aegypti*, carrier of yellow fever, have hitherto been thought to be entirely mute, but the experiments demonstrated that they have songs of their own, only they are outside the range of human hearing.

A number of interesting things about mosquitoes' singing were learned in the course of the work. With practice, the experimenters learned to distinguish between the songs of various genera of

mosquitoes, as one can tell the difference between the songs of birds. Not only that, they found distinct differences between the songs of male and female mosquitoes.

Voices of male mosquitoes were found generally to be higher-pitched than those of females. The female insects also had louder voices than their mates. But even at their loudest, they were often so faint that human ears could not perceive them, even when a hundred or more of the insects were induced to sing in chorus. Such choruses, of males at least, can be provoked by getting one female to start singing.

Mosquito sounds are as a rule not especially high pitched. They have a frequency range between 200 and 1,500 cycles per second, which is about the middle of the frequency range for human hearing.

Mosquitoes apparently are not soloists; at least, they will not perform without an audience. Solitary insects never sing; two or more must be together to get the concert started. If two mosquitoes of the same sex do not choose to sing, the addition of a third, of opposite sex, will often set them going.

Mosquito calls are not all alike. They seem to have a variety in emotional content. One type of song will be a mating call, another will indicate anger, a third will give warning of danger.

Additional recordings are now being made, the experimenters state, and as soon as conditions permit, each significant tone will be tested in the laboratory and in the field, to discover its possible usefulness in luring mosquitoes into traps.

Details of the research are reported in *Science* (March 30).

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#### CHEMISTRY

## New Electrolytic Device Provides Motor Fuel

► A BOLD bid to make motor fuel cheap by cracking water into oxygen and hydrogen and then recombining them is represented in patent 2,373,032, obtained by Bernard Klein of Baltimore. Mr. Klein has an electrolytic device which he holds to be more practicable than those hitherto tried for this purpose. It consists of a relatively long horizontal cylinder, with electrodes in its opposite ends, and baffle plates to prevent undue sloshing of the liquid and to keep the gases separated. Acidulated water is fed in near the middle, and the gases are led out through the end chambers.

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**SELF-PROPELLED DEATH**—Massed batteries of rockets give this LCM the striking power of a much larger vessel. Light and easily-handled, rockets are becoming increasingly more accurate under the scientific improvements constantly being developed by Navy ordnance experts.



## BOTANY

**Pear Blossoms Are Early In Eastern United States**

See Front Cover

► PEAR BLOSSOMS were very early this year in midwestern, eastern and southeastern parts of the country. The photograph of these blossoms on the front cover of this SCIENCE NEWS LETTER, was taken by Fremont Davis, Science Service staff photographer, on March 28 near Washington, D. C. The famous Japanese cherry blossoms around the Tidal Basin in Washington bloomed on March 20. The only other year they have been this early was in 1927. Fruit trees in general bloomed precociously this spring.

Dogwood, redbud and crabapple are at least a month early in these sections of the country. The double cherry blossoms in Washington, and the lilac were three weeks early. Cowslip, trillium and narcissus showed their faces about a week early.

*Science News Letter, April 14, 1945*

## AGRICULTURE

**Oil Sprays Kill Weeds In Carrot Gardens**

► CERTAIN paint-thinner oils sprayed on weeds in a carrot or parsnip garden kill the weeds effectively without injury to the vegetables, according to J. R. Hepler of the University of New Hampshire in a recent statement reviewing experimental work at two agricultural colleges, the Massachusetts State College and Cornell University. Sovasol No. 5 and No. 75, distributed by the Standard Oil Company of New York, were used. The first is widely used as a paint-thinner and for dry-cleaning clothes, the second is also a paint-thinner.

When Sovasol No. 75 was used, it was found necessary to thin it with white kerosene or stove oil; otherwise it burned the vegetables severely. With two parts of the kerosene to one part of the oil no burning occurred.

The best time to spray, it was found at the Massachusetts institution, is when the weeds are very small. When they were from five to six inches high, the spraying treatment was not effective. Small weeds wilted within an hour of treatment.

The spray should be applied with a flat nozzle, it was found, rather than with a circular nozzle. Approximately 80 gallons of oil spray per acre are needed.

The Cornell investigators found that

carrots, celery, celeriac and turnip-rooted parsley were quite tolerant to oil sprays, but that such crops as beets, lettuce, onions, and spinach, among others, were susceptible to injury. They determined that the oil sprays can be used with safety with all members of the parsley family, which includes carrots, parsnips and celery.

*Science News Letter, April 14, 1945*

## ANIMAL HUSBANDRY

**Flying Eggs by Air Doesn't Affect Hatchability**

► EGGS for the restocking of Europe's depleted poultry-yards can be shipped by airplane without harm to their hatchability, experiments by Dr. Richard M. Fraps, U. S. Department of Agriculture zoologist, strongly indicate. The research was carried on in the laboratories of the Bureau of Animal Industry at Beltsville, Md.

Sending either baby chicks or fertile eggs by ordinary ocean freighter is out of the question at present. It takes so long to make the trip, under wartime conditions, that the chicks would all die, and very few of the eggs would hatch. Shipment by air freighter, however, is practicable; and it is considered better economy to send eggs for hatching on the other side, rather than chicks already hatched.

Some one raised the question whether the reduced barometric pressures encountered at ordinary flying altitudes might not affect the hatchability of the eggs. So Dr. Fraps paralleled on a small scale the pressure-chamber tests to which aviator candidates are subjected: he put batches of eggs into closed vessels from which the air was partially exhausted. They were given this treatment for 12 hours a day for three successive days—a rough parallel of conditions prevailing on ordinary air-freighter flights. Then the eggs, together with control batches that had not been given the low-pressure treatment, were put into incubators and hatched.

No significant differences in hatchability were found between the "low-pressurized" eggs and the controls, even when pressures were reduced to correspond to altitudes far beyond the ceilings of any existing planes. For example, after exposure to a pressure equivalent to 87,000 feet one lot of eggs gave a 92% hatch, which was actually better than the performance of the untreated eggs used in this particular experiment.

*Science News Letter, April 14, 1945***IN SCIENCE**

## BIOCHEMISTRY

**Anti-Germ Chemicals from Neutron Bombardment**

► GREATER amounts of anti-germ chemicals such as penicillin, streptomycin, streptothricin and the like, or even more powerful chemicals of this general type, may be obtained by means of the cyclotron, it appears from studies by Dr. Wm. G. Myers and Miss Hazel Jean Hanson at Ohio State University.

About 100 new strains or mutations of *Penicillium notatum*, the mold from which penicillin is obtained, have been developed, they report (*Science*, April 6). These new strains were obtained by bombarding the mold spores with neutrons from the cyclotron. These new strains differ markedly in rate of spore formation and anti-germ activity.

The possibility that new anti-germ substances are being produced by the mold as a result of the neutron bombardment is now being investigated.

New strains of the organisms that yield streptothricin and streptomycin are also being obtained by neutron bombardment but not as frequently as in the case of *Penicillium notatum*.

*Science News Letter, April 14, 1945*

## ASTRONOMY

**White Dwarf Stars Found By Photographic Method**

► FIVE NEW white dwarf stars have been added to the list of known faint stars of high temperature and of a density so great as to be almost incredible, Dr. W. J. Luyten of the University of Minnesota and Dr. Martin Dartay of Argentina's Cordoba Observatory have reported to Harvard College Observatory.

This brings the number of known white dwarf stars to about 75. The newly-discovered white dwarfs are located in the southern constellations of Pavo, the peacock; Phoenix; Tucana, the toucan; and two are fairly close together in the constellation of Musca, the fly.

The stars were discovered when photographs taken with plates which were particularly sensitive to yellow light and those which were especially sensitive to blue light were compared. The plates were taken with the 60-inch reflecting telescope of the Cordoba Observatory.

*Science News Letter, April 14, 1945*



# SCIENCE FIELDS

## CHEMISTRY

## Synthetic Resins Used for Purifying Penicillin

► A SIMPLE method of purifying penicillin by means of synthetic resins is reported by Drs. E. Cruz-Coke, F. Gonzalez and W. Hulsen, of the University of Santiago, Chile. (*Science*, March 30)

Known as ionic exchange resins, these gel-like substances have already been used to free water and chemical solutions of inorganic salts. They are of two sorts, one which captures cations and the other anions. The Chilean scientists used specially prepared resins which absorbed proteins, amino acids and various other organic substances from biological materials.

By filtering penicillin first through the cationic resin, Ionac C, and then through the anionic resin, Ionac A, the Chilean scientists report obtaining a product which has all the penicillin activity of the original material but is free of toxicity for experimental animals and man. They believe this simple method will also be useful for purifying other active substances produced by molds and various biological agents. Present methods of purifying penicillin are time-consuming and costly.

*Science News Letter*, April 14, 1945

## CHEMISTRY

## Tomatoes May Have More Vitamin A Value

► TOMATOES with ten times as much vitamin A value as is contained in varieties now offered on the market may be developed by improved breeding, Dr. F. P. Zschiele of the University of Chicago botany department told the Iowa section of the American Chemical Society.

Such fruit, Dr. Zschiele said, will aid materially in supplying the vitamin A requirements of human beings.

Tomatoes offer unusual opportunities for the study of pigment relationships and for improvement by breeding for high contents of beta-carotene, according to Dr. Zschiele.

The photoelectric spectrophotometer, built by Dr. Zschiele, was used in analyzing the vitamin A, chlorophyll and carotenoids in plants through delicate, intricate measurements with light and ab-

sorption curves. Results can often be obtained with this micro method, now available to most laboratories, which cannot be secured in any other way, he said.

"The carotene content of vegetables varies widely, being high in spinach and broccoli leaves, medium in snap beans and peas, and low in lima beans," he explained. "For successful storage, the necessity for blanching has been shown repeatedly. Quick-frozen vegetables retain carotene reasonably well for one year, but losses are heavy during the second year."

Commercial carrot varieties were found to be remarkably uniform in carotene content, but Dr. Zschiele discovered an unexpectedly high content of alpha-carotene. In eggs, the high carotenol content and its close relationship to vitamin A makes analysis difficult. Spectrophotometric study showed that the chlorophyll and carotenoid contents in alfalfa and corn leaves were not affected greatly by certain fertilizer treatments.

*Science News Letter*, April 14, 1945

## BOTANY

## Botanical Collections Undamaged by War

► BOTANISTS are commencing to take stock of the world's great herbaria, or collections of pressed botanical specimens, that have been in the path of war. Prof. E. D. Merrill of Harvard University and the Arnold Arboretum states in a report to *Science* (April 6), that he has had communications from the USSR indicating that the great herbarium and botanical library at the Komarov Institute in Leningrad came through the siege of that city undamaged, although many bombs fell in the grounds. Great damage, however, was done to the living greenhouse collections by the fall of bomb-shattered glass.

The Siberian part of the important Turczaninow herbarium at Karkov was removed to Leningrad, and is safe. However, the general Karkov herbarium, the Ukrainian Academy of Science at Kiev and the Nikita Botanical Garden near Yalta were all looted by the Nazis and their scientific treasures removed to Germany.

From Paris it is reported that the great collections at the Museum of Natural History were left undisturbed by the invaders. The one important French collection of botanical specimens that is known to have been destroyed was that at the University of Caen, which was unfortunately in the path of the Normandy invasion.

*Science News Letter*, April 14, 1945

## ORDNANCE

## Army's Carbine Becomes Bantam-Weight Machine Gun

► THE ARMY'S .30-caliber carbine, that started out as a replacement for the service pistol, has now become a bantam-weight machine gun, a little brother of the B.A.R. By setting a gadget for full automatic fire, it can be made to rip out a burst of 15 shots in less time than it takes a startled Heinie to say "Donnerwetter!" That is, if he lives to finish saying it.

In more sedate terms, the modified weapon's cyclic rate of fire is 750 shots a minute. That works out to 12.5 shots a second, or about one and one-quarter seconds for the 15 cartridges in the ordinary loading clip. It can still be used as a single-shot weapon; a turn of a device known as the selector determines the type of fire to be delivered.

Adaptation of the carbine for light machine-gun jobs was carried out nearly a year ago, but the Army has withheld announcement of the fact until now. It proved its usefulness first in the tough hedgerow fighting of the Normandy campaign, and has been further battle-tested as our troops rolled across France and the Low Countries into Germany. It is said to be an especially good weapon for house-to-house fighting in cities.

Earlier modifications of the carbine have included the addition of a grenade launcher and an attachment to permit the regular trench knife to be used as a bayonet.

*Science News Letter*, April 14, 1945

## GEOLOGY

## Course of River Traced, Flowed 1,000,000 Years Ago

► THE COURSE of a great river, as big as the Ohio or bigger, that flowed across country from the Southern Appalachians to the Illinois valley more than a million years ago, has been traced by Prof. Karl Ver Steeg of the College of Wooster.

In *Science*, (March 30), Prof. Ver Steeg states that the great stream, which has been given the name Teays river, had its source in the Blue Ridge region of North Carolina and Virginia. It followed a northwesterly course, receiving tributaries draining large parts of what are now the states of Ohio, Indiana and Illinois. Much of its 800-mile-long valley is now buried under the great masses of earth and stones moved in by the great glacial sheets of the Pleistocene ice age.

*Science News Letter*, April 14, 1945

## HORTICULTURE

# Plant New Vegetables

Up-to-date catalogues list new seed varieties which are now available for the first time in quantity. Pan-American tomato can be had this year.

By FRANK THONE

► VICTORY Gardeners' dreams of last year are turning into realities this spring, as seeds they had heard about but couldn't get are now becoming available in sufficient quantities to justify listing in seed catalogues. And already there are dawns of dreams of new and better vegetables that may be ready a year from now, when the present scanty stocks shall have had another growing season in which to increase and multiply.

That is one of the tantalizing things about being a really up-on-your-toes gardener. You read about a tempting tomato, a luscious lettuce, a bountiful bean, brought to practical perfection by the plant breeders of the U. S. Department of Agriculture or at your own state experiment station—only to run into the discouraging line: "Seeds of this splendid new variety will not be available for general planting until a year from now." So you go back to hoeing your row of the really good plants you have, but they suddenly seem like perverse and wilted runts, fit food only for cutworms and caterpillars, as compared with the feast of Tantalus that has been denied you.

But patience is the gardener's virtue, as it is the fisherman's, and time brings the rewards of waiting. Here are three or four of last year's promises that have become this year's fulfillments.

## Breeder's Sensation

Pan-American tomato was the breeder's sensation, not so many months ago. A few fortunates were able to grow it last year, but there wasn't enough seed to give everybody a chance. Now there is.

Pan-American is a beautiful tomato, smoothly round as a tennis ball, but with much more solid substance inside. In this respect it resembles one of its parents, the Marglobe tomato. However, it has the considerable advantage of being quite immune to the serious fungus disease known as wilt, that simply murders some kinds of tomato plants. To confer this immunity, Marglobe was crossed with a tiny-fruited but hardy wild currant tomato from Peru, then bred up for several generations to get the fruit back

to proper size. This addition of South American parentage was what suggested the name, Pan-American, for the new variety.

Long a favorite among bush lima beans is the Fordhook variety. It has choice quality, but is a finicky kind of plant, all too apt to yield only a scanty crop. A new variety, available in quantity this year for the first time, is known as Fordhook 242. It keeps the high quality of its temperamental parent but is much more prolific.

Another good new bean variety has been christened the Pioneer, perhaps because it is intended primarily for planting in the Northwest and Intermountain areas. It is a snap bean, borne on lustily growing bushy plants. Its great advantage is resistance to the curly-top disease, a destructive plague in the section where the Pioneer bean is to be grown.

This business of developing specialized varieties, good only in given regions, is

to a considerable extent replacing earlier efforts to produce garden crops that can be grown all over the map. The Pioneer bean is one example. Another is found in two new cantaloupe varieties, known so far only as No. 6 and No. 7, that originated in Texas and are good only in the irrigated Southwest. They are highly resistant to another destructive disease, powdery mildew, and have the marketable virtues of tempting flavor and scent, good size and compact shape.

Almost everywhere in the country, however, one variety of sweetcorn is scoring its triumph. It is Golden Cross Bantam, which has been out only a few seasons, but these have proved long enough to make it a prime favorite everywhere. As its name indicates, a strong parental strain is the old favorite, Golden Bantam; but the principle of hybrid corn breeding has been called in to improve its quality and make it an earlier crop.

There are a few other Golden hybrids that are even earlier, but for main-crop purposes it rules the garden now.

Plant breeders don't like to talk too much about what they'll have for us next year—too many slips between cup and



**GARDEN PLANNING**—Victory Gardeners find listed in the seed catalogues new varieties that last year they heard about but could not get because seed stocks had not been sufficiently increased.





**NEW TOMATO**—This Pan-American tomato, offspring of North America's Marglobe and South America's small-fruited but disease-resistant currant tomato, is one of science's best new offerings.

lip, perhaps. However, one excellent thing has been announced for 1946 by the U. S. Department of Agriculture: a variety of lettuce that resists the urge to "bolt" and go to seed when the weather gets warm, that overcomes all the present standard varieties, (See SNL, March 10). This will give us home-raised salads, even in July and August.

The new lettuce has been given the appropriate name Slobolt. The breeders have finished their work on it, and propagation gardeners will soon be boosting the quantities of seed, so that all seedsmen can offer it next spring.

Ingenious methods are used by plant breeders and seed propagators to speed up the production of seed and get the quantities needed for general use, a year or two sooner than the plodding calendar would ordinarily permit. For example, a choice new variety may yield a few scant handfuls of seed at the end of a late summer's growth in the greenhouses at Beltsville, Md.

Instead of having to wait until the following spring, they are flown out for planting in Arizona, where by April they have already come to maturity and increased to a few scores of pounds.

These daughter seeds again do not wait, but take another airplane trip, this time to the cool Northwest, where they go through another cycle of reproduction and increase, so that within one year (with good luck) there may be enough seed to permit the beginning of general distribution to gardeners.

*Science News Letter, April 14, 1945*

#### BACTERIOLOGY

### Penicillin Kills Bacteria Within Cockroach Bodies

► PENICILLIN'S germ-killing capacity has recently been used in Harvard University's zoological laboratories, not for the benefit of the germ-inhabited individual but in an effort to solve a long-standing scientific riddle.

Prof. Charles T. Brues and Miss Ruth C. Dunn tell about the experiments in *Science* (March 30). In the cells of certain fatty masses in the bodies of cockroaches live certain bacteria-like organisms, passed on from generation to generation through the eggs. They are known technically as bacteroids. It has long been a subject of debate whether these germ-like creatures are parasites or symbionts—that is, whether they conferred any benefits on their insect hosts in exchange for the board and lodging they receive.

Prof. Brues and Miss Dunn first tried injecting solutions of various sulfa drugs into the body cavities of large cockroaches. Results of these early experiments were negative; the drugs apparently had no effect on the bacteroids. Then they used penicillin solutions, at high concentrations. This time the bacteroids died—and after anywhere from a day to a month, so did the cockroaches.

The two experimenters offer their conclusions with a note of caution: "We can not regard the present results as conclusive evidence that the bacteroids are necessary for the continued life of the cockroaches, but they make it appear very probable that such is the case and that they are symbiotic, and not parasitic, microorganisms."

*Science News Letter, April 14, 1945*

#### ELECTRONICS

### Radar to Be Used for Tracing Migrating Birds

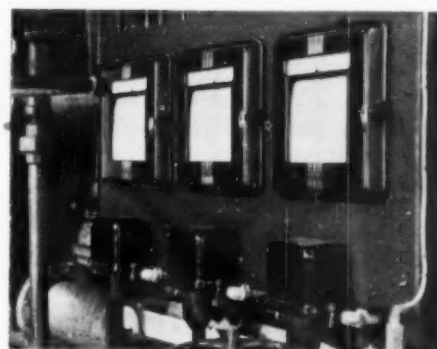
► RADAR, now used in tracking the deadly, fire-breathing birds of war, will in postwar times be put to the more peaceable task of following the migration flights of their feathered proto-

types. In *Science*, (March 30), Prof. Maurice Brooks of West Virginia University tells of his plans to use electronic equipment, installed on a high mountain-top in his state, to obtain data on the height, speed and direction of flight of wild geese, hawks and other birds large enough to register their presence on the radar screen.

Prof. Brooks states that he got the idea of using radar for this purpose from an ornithological friend who is at present a naval officer in the Pacific. The radar on his ship has often detected the presence of albatrosses, man-o'-war birds and other large species at ranges as great as five or six thousand yards, when the birds themselves were invisible. It is expected that peacetime bird-scouting with radar will gather much information hitherto unobtainable, especially about birds migrating at night or in hazy or cloudy weather, when visual observation is limited or even wholly impossible.

*Science News Letter, April 14, 1945*

*Zakatalsk nuts*, grown in Russia, are reported to have a vitamin C content about 40 times that of lemons, oranges and tangerines.



### pH CONTROL SIMPLIFIED BY MICROMAX RECORDERS

Efficiency of water-treatment in the Arkwright Corporation's Finishing Division, Fall River, Mass., has been considerably improved since the former method of checking manually has been superseded by the three glass-electrode Micromax pH Recorders shown above. Now filter plant operators automatically obtain complete, accurate pH information starting with raw water which varies from 5 to 9 pH, including water at the alum-treatment point, and ending with finished water at 7 pH.

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For further information, see Catalog N-96 (1).

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## Do You Know?

Wet laundry on the line will not freeze if a handful of salt is used in the rinse water.

The first description of *typhus* is found in an Italian manuscript written in 1083 A.D.

DDT-impregnated shirts are in use to protect soldiers against lice; they are effective for about two months.

The English sparrow was first imported into Brooklyn in 1851 to rid shade trees of inchworms.

Hulling strawberries before washing removes a protective outer tissue near the stem and causes a vitamin C loss.

Kovar, an alloy of iron, nickel and cobalt, expands with heat at about the same rate as hard glass and for that reason is used in electronic tubes.

Containers made of cardboard, impregnated and lacquered and lined with cellophane, are used in Germany for marmalade and jellies, it is reported.

Approximately 329,000,000,000 cigarettes were produced in the United States in 1944; over one-third were sent to military forces abroad, leaving for smokers at home about 38,000,000,000 fewer than they had in 1943.



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## PSYCHOLOGY

# Public Tolerant of CO's

Denunciation of conscientious objectors is not nearly so great as is generally supposed. Tolerance of them as individuals does not imply acceptance of their principles.

► PUBLIC denunciation of conscientious objectors is not nearly so great as is generally supposed, Dr. Leo P. Crespi, of Princeton University, found in a survey of public opinion reported to the Eastern Psychological Association in New York. Asked whether they would be willing to have a conscientious objector as a personal friend, the majority of those interviewed expressed no intolerance toward the CO as an individual. When asked what they believed is the public attitude toward CO's, however, the majority expressed the belief that the average person would not "want anything to do with CO's."

Tolerance of CO's as individuals does not imply acceptance of CO principles, it was found. There is no appreciable difference between men and women on either tolerance or approval of CO views.

## Women Undecided

► WOMEN after the war may find themselves torn between the desire to remain in industry and business, sharing equally with men in job opportunities and community activities, and the desire to take a part subordinate to men in the home, if the conflicting desires of a group of college students can be considered as any index to what other women will want.

The survey of 147 women students was reported to the meeting by Dr. Georgene H. Seward, of Connecticut College, New London.

"Liberals" in their views towards the place of women are more feminist, but less feminine, Dr. Seward found. The liberals come from homes having less emotional security, and they are more anxious themselves, she reported. But she found no evidence that either liberals or conservatives would want to turn down the role of wife and mother.

## Just Propaganda

► THE STORY of the "Black Hole of Calcutta," accepted as fact by the highest scholarly authorities and constantly circulated by psychologists, historians and other academic men, was actually only

a sample of early propaganda of the "atrocities story" type, Dr. George W. Hartmann, of Teachers College, Columbia University, told the meeting.

The original author of the story, Dr. Hartmann said, is demonstrated to have been a forger, a libeller, and a fabricator of other tales of extraordinary cruelty of similar style and content. The story itself is full of contradictions and assertions of improbable happenings.

Study of the story, however, reveals that the author made use of a dozen standard conditions by which the propagandist hopes to get people to believe such "atrocities stories."

*Science News Letter, April 14, 1945*

## CHEMISTRY

# Scratch-Proof Coating For Noses of Planes

► YOUR POSTWAR flivver—whether it flies on wings or rolls on wheels—is likely to come to you tightly coated with a scratch-proof transparent film that can be easily peeled off. That is a logical peacetime extension to expect of U. S. patent 2,372,982, issued to A. B. Richards, J. A. Mickey and J. T. O'Reilly, all of Dearborn, Mich., and assigned by them to the Ford Motor Company.

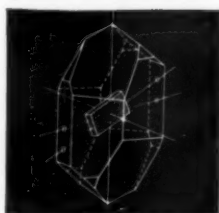
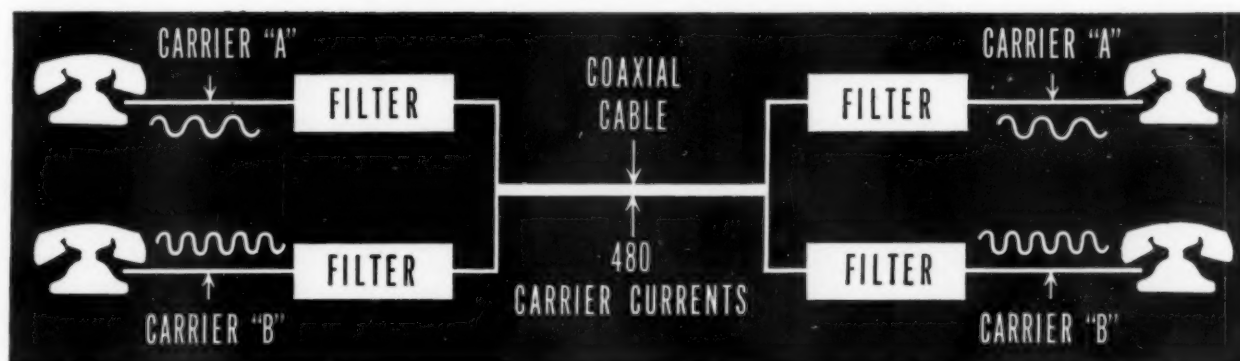
The protecting coating, now intended primarily for use on the transparent plastic noses and turrets of fighting planes, consists of polyvinyl alcohol dissolved in water, with small amounts of a chemical wetting agent and glycerin added. The parts to be protected are dipped in the solution, or the coating may be sprayed or brushed on. Once dried, it sticks tight, giving protection against rubbing and scratching; however, a slight break anywhere will permit ready peeling. A thread, tab or other device may be incorporated as a rip-starter. The solution may also be colored, so that the extent of its coverage can be seen at a glance.

*Science News Letter, April 14, 1945*

There is a probable moose population of at least 500 animals in the Isle Royale National park, situated in northern Lake Superior.



## Crystal gateways for your voice



**F**our hundred and eighty telephone conversations over a coaxial cable was one of the last peacetime achievements of communication research in Bell Telephone Laboratories. In this multi-channel telephone system,

each conversation is transported by its own high-frequency carrier current. At each end of the line are crystal gateways; each opens in response to its own particular "carrier" with the message it transports. In telephone terminology, these gateways are filters.

The ultra-selective characteristic of these filters is made possible by piezo-electric quartz plates, cut in a special manner from the mother crystal, and mounted

in vacuum. Each set of plates is precisely adjusted so that the filter responds only to the frequency of its assigned channel, rejecting all others. In the coaxial terminal equipment, such crystal gates sort out messages for delivery to their four hundred and eighty individual destinations.

In recent years, Bell Telephone Laboratories research has provided the Armed Forces with many types of electrical equipment in which frequency is controlled by quartz crystals. Notable is the tank radio set which enables a tank crew to communicate over any one of 80 different transmission frequency channels by simply plugging in the appropriate crystal. The future holds rich possibilities for the use of quartz crystals in Bell System telephone service.

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ECOLOGY  
**NATURE  
RAMBLINGS**  
*by Frank Thone*



The Twain Meet

► SOJOURNERS from the northeastern quarter of this country who happen to be anywhere in the Southwest when the desert's short period of blossoming sweeps over it like a miracle are apt to be astonished at the similarity between the flowers that burst out of the naked earth between the tough-leaved bushes and small trees of the chaparral and the flora they have known in the taller, denser wood-

lands of their more humid home states. Not only is there the same quick growth and flowering, the same delicacy of form and vividness of color, but many of the families and even genera can be identified as the same as those "back home": violets and buttercups, shooting-stars and wild lilies, geraniums and columbines, and a whole host of others.

This situation is not as "unnatural" as it might appear at first blush. For a little while in spring the desert relents a trifle in its ecological austerity, and at the same time the Eastern woodlands, not yet wholly redeemed from the grip of winter, have a whiff of the desert about them.

There are two principal factors in the dryness of a desert: scanty supply of water, and rapid evaporation of what moisture there is. But in spring the dry lands of our West and Southwest have the maximum of their year's short rations of water; where there has been snow, it has thawed, and there have been rains during late winter, lasting through March, and perhaps into April. So although the high evaporation rate persists, there is for the moment at least a fairly abundant supply of moisture in the soil. On the other hand, the Eastern woodlands are likely to be at least partly dried out by the ranging March winds; winter snows have vanished and spring rains have not yet become copious.

Above all, the evaporation rate in spring woods is higher than it is at any other time of year. The restless winds are one factor. Of perhaps equal importance is the warm sunshine, able to strike straight down through the still-bare branches of the trees and act on areas that it never reaches after the leaves have grown and closed the forest canopy. The network of twigs affords partial shade, to be sure, as well as a partial check to the winds, but probably not more than is offered by the scattered but mostly evergreen-leaved vegetation of the semi-arid Western brushlands.

These general considerations are borne out by actual measurements of evaporation rates in normally humid woodlands during the spring months. These rates are high until the leafy canopy is closed overhead, and then fall off rather abruptly. Thus there seem to be good physical causes underlying the springtime similarities in biological behavior between woodland and desert wildflower populations.

*Science News Letter, April 14, 1945*

CHEMISTRY

**Corrosion Control Method Preserves Equipment**

► MILITARY supplies and equipment can be salvaged without damage from sunken ships or lie for weeks on island beachheads or in jungle outposts without the slightest damage from the elements, as the result of corrosion control methods developed by the Air Technical Service Command at San Antonio, Texas.

This corrosion control program, expected to save the government millions of dollars, preserves parts for airplanes from damage by the elements while en route to the war theaters. The program provides for applications of many kinds of rust-removing solvents and coatings with rust preventives, in addition to paper and wax coatings. The treatment is designed to prevent all types of corrosion and fungus growth for at least 18 months under any type of climatic condition.

Even microscopic fingerprint moisture contains enough acid to cause corrosion of highly polished surfaces, such as engine and precision parts. Special solvents applied by pressure or with a small brush eliminate the acid that in the past has caused great losses by rendering valuable supplies useless.

*Science News Letter, April 14, 1945*

Major mineral elements in plant growth are nitrogen, phosphorus, calcium, magnesium, potassium and sulfur; essential "trace" elements include iron, manganese, and boron.

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## • Books of the Week •

► MUCH HAS BEEN LEARNED about the workings of the normal human mind through study of the exaggerated conditions present in various mental illnesses and abnormalities. Description and analysis of such conditions from the point of view of the psychologist rather than the physician concerned mainly with practical matters of treatment are found in somewhat technical form in a **TEXTBOOK OF ABNORMAL PSYCHOLOGY** by Roy M. Dorcus and G. Wilson Shaffer (*Williams and Wilkins*, \$4.).

*Science News Letter, April 14, 1945*

## • Just Off the Press •

**AIRCRAFT ARMAMENT**—Louis Bruchess—*Aerosphere, Inc.*, 224 p., illus., \$6.

**THE BUILDERS OF THE BRIDGE**, the Story of John Roebling and His Son—D. B. Steinman—*Harcourt*, 457 p., illus., \$3.50.

**A MILLION HOMES A YEAR**—Dorothy Rosenman—*Harcourt*, 333 p., illus., \$3.50.

**THE PACIFIC ISLANDS HANDBOOK, 1944**—R. W. Robson—*Macmillan*, 371 p., illus., \$4.

**PSYCHOLOGY, PRINCIPLES AND APPLICATIONS**—T. L. Engle—*World Book Co.*, 549 p., illus., \$2.12. A textbook for high schools and junior colleges.

**THE RADIO AMATEUR'S HANDBOOK**—The American Radio Relay League Headquarters Staff—*Am. Radio Relay League*, 512 p., paper, illus., \$1., 22nd ed.

**TAKE YOUR PLACE AT THE PEACE TABLE**—Edward L. Bernays—*Gerent Press*, 60 p., paper, \$1.

**TECTONIC MAP OF THE UNITED STATES, 1944**—National Research Council, Div. of Geology and Geography, Comm. on Tectonics—*Am. Asso. of Petroleum Geologists*, \$1.75.

**TEXTBOOK OF ABNORMAL PSYCHOLOGY**—Roy M. Dorcus and G. Wilson Shaffer—*Williams & Wilkins*, 547 p., illus., \$4., 3rd ed.

**YOUR FORESTS**—Martha Bensley Bruère—*Lippincott*, 159 p., illus., \$2.50.

*Science News Letter, April 14, 1945*

with the new flooring in tests at the Aberdeen Proving Ground, the floor bulged but remained intact, and the car rolled merrily along.

*Science News Letter, April 14, 1945*

### ASTRONOMY

## Star Shines Through Companion's Atmosphere

► LIGHT from the blue member of an eclipsing star team in the constellation of the Big Bear during eclipse shines through the outer atmosphere of its yellow-white companion. Only at mid-

eclipse can we see the yellow-white star, composed largely of calcium gases.

The diameter of the calcium star is twice that of its bluish helium companion star, Dr. W. A. Hiltner of the Yerkes and McDonald Observatories of the Universities of Chicago and Texas reports in the *Astrophysical Journal*. The bluish star in turn has a diameter twice that of the sun.

A brilliant calcium line in the spectrum of TX Ursae Majoris is visible both before and after mid-eclipse, Dr. Hiltner found.

*Science News Letter, April 14, 1945*



A Spencer Microscope being used aboard a United States heavy cruiser.



### ORDNANCE

## Floor Just Bulges When German Land Mines Go Off

► DRIVERS of the Army's light armored military cars, and their assistants too, are no longer threatened with serious injury when a German land mine goes off underneath the vehicle. The secret is a new floor, shaped to fit over the front axle housing, which affords great protection against the dangerous enemy devices.

Developed by Army Ordnance and automotive engineers, the new floor consists of five sections of armor plate fully heat-treated to improve its physical properties. When German-type mines were exploded beneath military cars equipped

## Microscopes go into Battle, too

Every warship has its hospital—not only to treat battle casualties but to care for illnesses and accidents.

An indispensable item of equipment of course, is the microscope—used in clinical work, making blood counts, aiding in diagnosis, serving many laboratory needs.

Spencer provides these and many other optical instruments for the U. S. Navy—including battleship turret gunsights, aircraft and anti-aircraft gunsights, turret periscopes,

prism binoculars, field glasses and telescopic alidades for navigation.



**Spencer** LENS COMPANY  
BUFFALO, NEW YORK  
SCIENTIFIC INSTRUMENT DIVISION OF  
AMERICAN OPTICAL COMPANY

# • New Machines and Gadgets •

❁ **DRINK COOLER** and sipper is a combination glass device with an elongated container to hold a refrigerant material and a tube constructed in one side for sipping the liquid. When placed in a filled drinking glass it cools the liquid, particularly as it is sipped.

*Science News Letter, April 14, 1945*

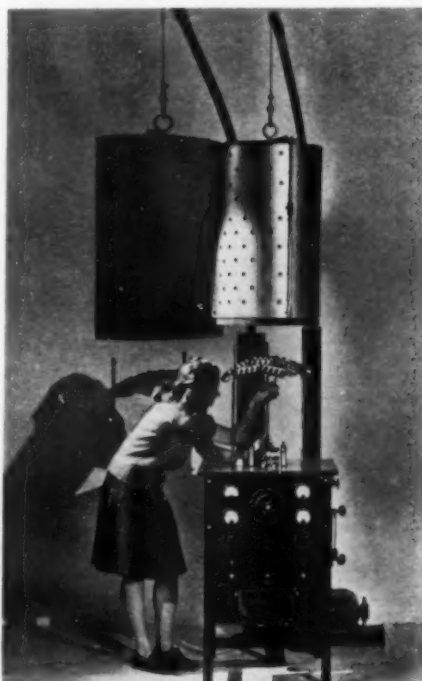
❁ **SORTING TILES** by color, electronically and automatically as they emerge from kilns on conveyor belts, is successfully performed experimentally. Cathode-ray oscilloscope and phototube convert a ray of light reflected from each passing tile into an electric impulse that shuttles it to the proper bin.

*Science News Letter, April 14, 1945*

❁ **ULTRAVIOLET** radiations are prevented from passing through transparent plastics, especially those of organic esters of cellulose, by a newly patented process. Certain cinchona or cinchona-like compounds such as the acid salts of quinine, quinidine, cinchonine or chinchonidine are added to the plastic.

*Science News Letter, April 14, 1945*

❁ **EVAPORATOR**, to produce films on all types of surfaces, is used in making mirrors by evaporating metals, such as aluminum, chromium, silver and gold, on the surface of glass. It is also used to apply low-reflecting surfaces to lenses in



field glasses. The picture shows its hood raised for loading.

*Science News Letter, April 14, 1945*

❁ **LIGHT PENCIL**, used to mark sensitized photographic surfaces, has within its opaque barrel a small dry battery, a light bulb separated from the battery with

a spring, and a projecting point of lucite or glass through which a narrow light beam may escape. Pressure on the point forces the bulb against the battery.

*Science News Letter, April 14, 1945*

❁ **PORTABLE** infrared unit, for use in industrial plants where quick heating of small machine parts is required, is a single infrared bulb in a reflecting shield, similar to some types of reading lamps, mounted by an adjustable arm on a portable stand. One use is to bake insulation varnishes on small motors.

*Science News Letter, April 14, 1945*

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 254.

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## Question Box

### AERONAUTICS

What was included in the cargo on the recent international commercial Airfreight shipment to Mexico? p. 229.

### AGRICULTURE

What oil spray kills the weeds in a carrot or parsnip garden? p. 232.

### ANIMAL HUSBANDRY

How much effect does flying eggs by air have on their hatchability? p. 232.

### ASTRONOMY

Where are the five new white dwarf stars located in the sky? p. 232.

### BACTERIOLOGY

How successful was penicillin for killing bacteria in the bodies of cockroaches? p. 235.

### BOTANY

When did the Japanese cherry blossoms in Washington, D. C. bloom? p. 232.

### CHEMISTRY

How much vitamin A content may tomatoes have in the future? p. 233.

Where published sources are used they are cited.

What is the new, simpler method for purifying penicillin? p. 233.

### ELECTRONICS

How will radar be used to trace migrating birds? p. 235.

### ENTOMOLOGY

Why were the love songs of mosquitoes recorded? p. 231.

### HORTICULTURE

What is the advantage of the Pan-American tomato? p. 234.

### MEDICINE

How many pints of blood come from Fort Worth each week? p. 230.

### PSYCHOLOGY

What are the ten points which have been outlined as a basis for a lasting peace? p. 227.

What is the general public feeling toward conscientious objectors? p. 236.

What may be the effect of electric shock treatments? p. 230.

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